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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,537	06/17/2005	Michael Berke	200-100	6483

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EXAMINER	
SAINT SURIN, JACQUES M	
ART UNIT	PAPER NUMBER
2856	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/539,537	BERKE, MICHAEL	
	Examiner	Art Unit	
	Jacques M. Saint-Surin	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 September 2006 and 17 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4-9* is/are rejected.

7)☒ Claim(s) *3* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 June 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *09/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-2 and 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wooh et al. (US Patent 6,382028) in view of Nottingham et al. (US Patent 4,803,638).

Regarding claims 1 and 9, Wooh et al discloses a method for determining the size of a crack in a workpiece, more specifically the depth of a crack in said workpiece, using the ultrasonic pulse-echo method (col. 1, lines 38-41), said method involving the following method steps:

a workpiece (16) is chosen having a front face (22) and a back face (20), wherein the workpiece (16) exhibits a crack (24) starting at the back face (20);

an angle beam probe (14) is placed on the front face (22), the angle beam probe (14) sends ultrasonic pulses at an angle alpha (θ) into the workpiece (16) and receives echo signals of said pulses;

the angle beam probe (14) is moved at least once over the crack (24) so that the radiation beam of the angle beam probe sweeps across the entire crack (col. 3, lines 41-43),

the size of the crack is calculated from the width of the envelope curve at a predetermined partial amplitude and from the maximum amplitude of the envelope curve (col. 3, lines 47-50). Although Wooh discloses a microprocessor 56 which inherently requires digitized signal and arithmetic circuit to determine the location, size and orientation of the defect, it does not specifically disclose the received echo signals are stored in a memory as pairs of echo signal values over travel time, whereby the stored pairs of values form a multitude and an envelope curve is constructed of this multitude wherein for the construction of the envelope curve the high values of the stored pairs are used. Nottingham discloses the flaw gates are arranged in pairs so that data is processed and recorded in one flaw gate while the other flaw gate in the pair can transfer flaw indications and corresponding transducer positions to a main computer. The alternating of the flaw gates during data collection and processing insures that data is not lost when a large number of reflector indications are detected in the window of a particular flaw gate pair. Nottingham further discloses the flaw gates in the preferred embodiment select and record, as a reflection indication, only the largest amplitude signal, as compared to a threshold, within a time window which can correspond to depth or location within the material being inspected (col. 3, lines 39-48). The threshold curve 138 is obtained by bouncing ultrasonic pulses off of known depth (time of flight) and known minimum size reflectors in a calibration block, and recording the maximum amplitude of the signals returned for each known depth reflector. The maximum amplitude signals plotted with respect to time produce the threshold curve, that is, the threshold curve is a distance versus amplitude correction curve for a

particular depth/time window (col. 12, lines 48-56). It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in Wooh the techniques of Nottingham because the depth versus angle change curve can also be determined during calibration or calculated from the known characteristics of sound travel in the material being examined wherein the depth and adjusted flaw angle define the location of the indication along with the axial position of the transducer and can then be used to display flaw indications using a known display system which allows the image of the object being inspected to be presented in several different views along with the detected indications in order to see the location and size of flaws thereby, making the above combination more effective by obtaining a reliable and accurate inspection.

Regarding claim 9, it is similar in scope with claim 1 and therefore, it is rejected for the reasons set forth for that claim.

Regarding claim 2, Wooh does not disclose wherein several echo amplitudes are obtained for an individual value of the travel time, and wherein only the echo amplitude having the highest value is stored. Nottingham discloses the flaw gates in the preferred embodiment select and record, as a reflection indication, only the largest amplitude signal, as compared to a threshold, within a time window which can correspond to depth or location within the material being inspected (col. 3, lines 43-46). It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in Wooh the techniques of Nottingham because the flaw gates produce the indication by comparing the digitized transducer signal waveform with a threshold curve where an

indication is an excursion of the signal waveform above the threshold and the flaw gates each contain a comparator that indicates when the window is open and activates a waveform memory that automatically stores the digitized transducer signals during the window thereby providing a more reliable inspection with the selection of the echoes with the highest amplitude.

Regarding claim 4, Wooh discloses a microprocessor 56 and arithmetic circuit for determining the size and location of defect.

Regarding claims 5 and 8 Wooh discloses a steering transducer 12 such as a phased array which sweeps an ultrasonic beam 14 through a range of angles from the Y axis (see: col. 3, lines 41-44).

Regarding claims 6-7, Wooh discloses ultrasonic pulse echo technique, a transmitter 12a, a receiver 50a, a microprocessor 56 which inherently includes an A/D converter to perform its function since data must be digitized in order to be used by the microprocessor. In the alternative, Nottingham discloses digitizer 34, memory 122, display 60 and CPU 120. It would have been obvious to one of the ordinary skill in the art at the time of the invention to utilize in Wooh the techniques of Nottingham because the digitizer converts the analog data into digital format before being transmitted and processed by the computer in order to ensure reliable and accurate inspection.

Allowable Subject Matter

3. Claim 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Roth (US Patent 5,629,865) discloses a pulse echo ultrasonic imaging method for eliminating sample thickness variation effects.

Moran et al. (US Patent 4,947,351) discloses ultrasonic scan system for nondestructive inspection.

Dittrich et al. (US Patent 6,877,377) discloses a non-destructive ultrasound test method for detection of damage and device for carrying out same.

Wallingford et al. (US Patent 5,383,366) discloses ultrasonic two probe system for locating and sizing.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacques M. Saint-Surin whose telephone number is (571) 272-2206. The examiner can normally be reached on Mondays to Fridays between 10:30 A.M and 800 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jacques M. Saint-Surin
January 04, 2006

HEZRON WILLIAMS
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